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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,359	04/02/2001	Samuel L. Thomasson	10205.029	9367
7590		12/01/2004	EXAMINER	
Paul F. Wille		SINGH, RAMNANDAN P		
6407 East Clinton Street		ART UNIT		
Scottsdale, AZ 85254		PAPER NUMBER		
		2644		

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/824,359

**Applicant(s)**

THOMASSON ET AL.

**Examiner**

Ramnandan Singh

**Art Unit**

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date # <u>2; April 02, 2001</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Double Patenting*

#### 1. Analysis:

To demonstrate that the instant application 09/824359 and the copending application no. 09/769564 are claiming common subject matter, a brief comparative analysis is presented below:

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#### Claim 8 of Instant Application:

Apparatus for detecting the presence of a shadow in an audio signal, said apparatus comprising:

a band pass filter;

a delay line having an input coupled to said band pass filter and at least one output, wherein the maximum delay of said delay line is less than fifty milliseconds; and

a correlator including a logic circuit having a first input coupled to the input of said delay line, a second input coupled to an output of said delay line, and an output; an up-down counter; a first comparator for incrementing said up-down counter when the output from said logic circuit is above a first threshold; a second comparator for decrementing said up-down counter when the output from said logic circuit is below a second threshold.

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Claim 13 of Copending Application No: 09/769564:

Apparatus for detecting the presence of a shadow in an audio signal, said apparatus comprising:

a band pass filter;

a delay line having an input coupled to said band pass filter and at least one output;

a correlator having a first input coupled to the input of said delay line, a second input coupled to an output of said delay line, and an output; and

a low pass filter coupled to the output of said correlator; wherein the maximum delay of said delay line is less than fifty milliseconds.

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From the comparison of the above claims, it is clear that claim 8 of the instant application is a narrow version of claim 13 of the copending application. Thus, the copending application and the instant application are claiming common subject matter.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 8-9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 13-15 of the copending application no. 09/769564. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 13-15 of the copending application no. 09/769564 encompass the limitations of claims 8-9 of the instant application. Thus, claim 8 of the instant application is an obvious variation of claim 13 of the copending application by addition a logic circuit with an up-down counter and comparators to the correlator of claim 13 of the copending application to detect the presence or absence of a shadow in the audio signal.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama et al [US 4,257,069] in view of Handy ["Use of CCD in the Development of Digital Logic", IEEE Trans. on Electron Devices, Vol. ED-24-24, No. 8; 1977; pp. 1049-1061].

Regarding claim 1, Murayama et al teach a method for correlating two signals, the method comprising the steps of:

applying signals to an exclusive-NOR gate (69) and exclusive-OR gate (71);

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counting the number of logic ones from the exclusive-NOR gate in a first counter (66); and controlling a second counter (73) based on the results of the first counter [Fig. 9; col. 9, lines 16-42]. Further, different thresholds (i.e. **predetermined values**) associated with the counter are applied to determine a degree of correlation [Murayama et al; col. 4, lines 11-18; col. 4, lines 34-48; Abstract].

Although Murayama et al teach an exclusive-OR gate (71), they do not teach expressly a second exclusive-NOR gate.

Handy teaches generating an EXCLUSIVE-NOR and NAND function by utilizing EXCLUSIVE-OR/AND network in conjunction with the NOT network as depicted in Fig. 9 [Pages 1052-1053].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the technique of Handy to generate a second EXCLUSIVE-NOR gate for use with Murayama et al so that a chip having all EXCLUSIVE-NOR gates (i.e. all similar gates) can be manufactured economically.

Regarding claim 2, Murayama et al further teach a method producing a signal indicative of correlation when the count in the first counter (66) exceeds a threshold (i.e. **predetermined value**) [col. 9, lines 29-41; Abstract].

Claim 3 is essentially similar to claim 1 except for delaying a digital signal to produce a delayed signal. Murayama et al further teach using either D-type flip-flops 49 and 51 to delay the signals [Figs. 6-9; col. 7, lines 16-28] or shift registers to delay the signals [Figs. 2 and 3].

Regarding claim 4, Murayama et al further teach using digitized values of input signals,  $K_0(i)$  and  $K_1(i)$ , as shown in Fig. 9.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Murayama et al and Handy as applied to claim 3 above, and further in view of Braams et al [US 5,850,438].

Regarding claim 5, the combination of Murayama et al and Handy does not teach expressly using a band pass filter.

Braams et al teach using a band pass filter (12) for a telephone system having a handset (56) wherein the audio signal is filtered using the band pass filter (12) and then the filtered signal is passed to a number of correlators (112-118) [Figs. 1, 5, 8].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the band pass filter of Braams et al with the combination of Handy and Murayama et al to eliminate voice and noise outside the tone frequencies.



7. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama et al [US 4,257,069] in view of Handy ["Use of CCD in the Development of Digital Logic", IEEE Trans. on Electron Devices, Vol. ED-24-24, No. 8; 1977; pp. 1049-1061] and further in view of Braams et al [US 5,850,438].

Regarding claim 6, In a telephone, an improved correlator for detecting a shadow signal on the line input of said telephone, said correlator comprising:

a delay line (49) having an input coupled to the line input and at least one output;  
an exclusive-NOR circuit (69) having a first input coupled to the input of the delay line, a second input coupled to an output of the delay line, and an output; and  
a first counter (66) coupled to the output of the exclusive-NOR circuit [Fig. 9; col. 9, lines 16-42]. Further, different thresholds (i.e. **predetermined values**) associated with the counter are applied to determine a degree of correlation [Murayama et al; col. 4, lines 11-18; col. 4, lines 34-48; Abstract].

Although Murayama et al teach an exclusive-OR gate (71), they do not teach expressly a second exclusive-NOR gate.

Handy teaches generating an EXCLUSIVE-NOR and NAND function by utilizing EXCLUSIVE-OR/AND network in conjunction with the NOT network as depicted in Fig. 9 [Pages 1052-1053].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the technique of Handy to generate a second EXCLUSIVE-NOR gate for use with Murayama et al so that a chip having all EXCLUSIVE-NOR gates (i.e. all similar gates) can be manufactured economically.

Further, although Murayama et al teach counters (66) and (73), they do not teach expressly up-down counters. However, the use of an up-down with either an exclusive-NOR correlator or an exclusive-OR correlator is well known in the art.

Braams et al teach using a band pass filter (12) for a telephone system having a handset (56) wherein the audio signal is filtered using the band pass filter (12) and then the filtered signal is passed to a number of correlators (112-118) [Figs. 1, 5, 8; col. 4, lines 54-67]. Further, Braams et al disclose using up-down counters 72, 76, 80, and 84, each having a threshold, connected to exclusive-NOR correlators 70, 74, 78 and 82 respectively [Fig. 5; col. 5, line 35 to col. 6, line 26]. Further, Figs. 6, 9-11 illustrate using multiple comparators to detect signals [col. 9, line 58 to col. 10, line 64].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the up-down counters of Braams et al with the combination of Murayama et al and Hardy in order to reliably detect the signals using multiple parallel correlators [Braams et al; col.. 1, lines 44-67; Abstract].

Claim 8 is essentially similar to claim 6 and is rejected for the reasons stated above except for the fact that the maximum delay is less than fifty milliseconds. However, since Murayama et al teach delaying a signal to accommodate various lengths of delay, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to accommodate the maximum delay which is less than fifty milliseconds also subject to circuit, system and design constraints.

Regarding claim 7, Braams et al further teach the telephone comprising: a band pass filter (12) for use the delay line [Fig. 1].

Regarding claim 9, the limitation has been shown above.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Vancraeynest [US 5,239,496] teaches digital parallel correlators [Figs. 1-4; col. 7, line 11 to col. 8, line 6];

(ii) Ichida et al [US 4,220,967] teach applying multiple independent correlators for detecting delayed signals [Figs. 7-8; col. 3, line 39 to col. 4, line 2; col. 5, lines 22-63; col. 6, lines 21-57]; and

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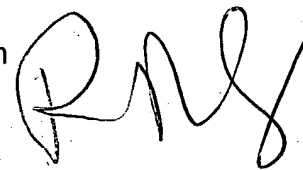
(iii) Tiemann et al [US 6,009,118] teach parallel correlators for a spread spectrum receiver [Figs. 1-23; Abstract].

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (703)308-6270. The examiner can normally be reached on M-F(8:00-4:30).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester Isen can be reached on (703)-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh  
Examiner  
Art Unit 2644



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PRIMARY EXAMINER